

Orthopaedic Surgeons Have a High Prevalence of Burnout, Depression, and Suicide: Review of Factors Which Contribute or Reduce Further Harm

Jason M. Jennings, MD

Peter A. Gold, MD 

Kate Nellans, MD

Sreevathsa Boraiah, MD

From the Department of Orthopaedic Surgery (Jennings), Colorado Joint Replacement Porter Adventist Hospital Denver, Colorado, Adjunct Professor University of Denver Biomedical; Department of Orthopaedic Surgery (Gold), Thomas Jefferson University Hospital, Rothman Institute, Philadelphia, PA; Department of Orthopaedic Surgery (Nellans), Long Island Jewish Medical Center, Northwell Health Orthopaedic Institute, New Hyde Park, NY, Assistant Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell; and the Department of Orthopaedic Surgery (Boraiah), Northshore University Hospital Northwell Health Orthopaedic Institute Manhasset, NY, Associate Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Correspondence to Boraiah:
vathsaboraiah@gmail.com

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J Am Acad Orthop Surg 2022;30:e528-e535

DOI: 10.5435/JAAOS-D-21-00299

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ABSTRACT

Orthopaedic surgeons have the highest prevalence of death by suicide among all surgical subspecialties, comprising 28.2% of surgeon suicides from 2003 to 2017. There is a continuum of burnout, depression, and other mental health illnesses likely contributing to these numbers in our profession. Stigmatization in terms of medical licensing and professional development are currently barriers to seeking mental health treatment. Education on the risk and treatment of burnout, depression, and suicidal ideations should begin early in a surgeon's career. This review documents the issue of physician burnout and depression and makes recommendations regarding necessary changes to counteract mental illness in orthopaedic surgeons.

Mental health issues have recently gained attention in all aspects of society including the medical profession and professional sports. Burnout, depression, and suicide occur in many professions; however, this has largely been overlooked in the orthopaedic literature.¹⁻³ In this review, we study suicide, burnout, and depression with a focus specifically on orthopaedic surgeons. We also analyze the barriers to seek mental health help and discuss particular areas of improvement to enhance our institutional support and ultimately the life of orthopaedic surgeons. Although these are presented individually (ie, burnout, depression, and suicide), it is important for the reader to understand that these can be a continuum on the mental health spectrum.

Why Orthopaedic Surgeons?

We have all been socialized into an orthopaedic profession rich in history and innovative solutions for treating patients with musculoskeletal issues. As we strive for excellence, many orthopaedic surgeons define their identity in perfection and efficiency at all costs. We must reflect on the burden of this cost though. We have been taught to be tough and push through challenges without

regard for our or our colleagues own mental, emotional, and/or physical fatigue. Although our perfectionism pushes us to improve, it also creates a culture that leaves no room for error and no space for grace when a mistake is made. In fact, these qualities dehumanize the experience of being an orthopaedic surgeon, as no one can truly be perfect and wildly efficient all of the time. Finally, these unrealistic expectations create a competitive atmosphere that decreases our ability to be vulnerable and support one another when we need it the most. In the pursuit of perfection, personal issues continue to be pushed aside in favor chasing an unachievable level of professional achievement.⁴ Demanding factors such as increased malpractice lawsuits, changes in patient attitudes (ie, patients no longer putting surgeons on a pedestal), greater administrative demands, burdensome institutional policies, and reduction in autonomy reflect new challenges for surgeons.⁵ Furthermore, the surgeon is part of the team when enhancing performance and improving workflows; however, when medical or legal issue arises, surgeons alone are typically held accountable. These unique challenges highlight a modern era of orthopaedics, which may explain our increased risk for mental health issues.

Burnout, Depression, and Suicide

Burnout

Emotional exhaustion, depersonalization, and low personal accomplishments define the most common symptoms of burnout.^{6,7} Orthopaedic surgeon burnout rates are reported as high as 40% to 60%, with workload being one of the highest contributing factors.⁶⁻⁸ Objective (ie, work hours and case volumes) and subjective (ie, responsibility for patient health, difficulty forgiving oneself for complications, and tendency for self-reproach) factors are related to orthopaedic burnout.^{4,7}

In a recent study, Verret et al⁸ categorized burnout in orthopaedic surgeons and found a significant difference between surgeon career level, 9% of attendings, 6% of fellows, and 34% of residents who reported high levels of depersonalization. Furthermore, 16% of attendings, 31% of fellows, and 34% of residents were found to have high levels of emotional exhaustion. Workload, regardless of one's stage in career, and decreased job control were associated with burnout. Somerson et al⁶ found increased burnout among orthopaedic residents who worked >80 hours per week, used the electronic medical record for >20 hours per week, or received verbal abuse from faculty.

Depression

Warning signs for depression include making hopeless statements, increased anxiety, mood swings, isolation, or increase substance use.⁴ The Patient Health Questionnaire 9 scores the severity of depression, with a total of 5, 10, 15, and 20 representing mild, moderate, moderately severe, and severe depression, respectively (Figure 1).⁹ Lichstein et al¹⁰ surveyed 661 orthopaedic residents among 46 programs for burnout, depression, and signs of alcohol or substance abuse only to find that the depression rate in residents (13%) was two times greater than the general population. They also found that 52% and 61% of orthopaedic residents reported burnout and met the criteria for either alcohol or drug abuse, respectively. In their analysis, exceeding duty hour restrictions (OR 2.50; 95% confidence interval [CI], 1.32 to 4.00; $P < 0.01$) and lack of program support (OR 3.85; 95% CI, 2.08 to 7.14; $P < 0.01$) were significantly associated with depression.

Factors protective against depression in practicing surgeons include marriage or spousal support, career satisfaction, autonomy, and practice in an academic setting.¹¹ In a study of 279 orthopaedic residents from 41 institutions, surgical independence, increased case volume/variety, strong mentorship, educational opportunities, and dedicated mental health resources were associated with higher mental health inventory scores.¹²

Surgeon Suicide

The most recent data (2003 to 2017) from the Center for Disease Control National Violence Death Reporting System suggest that the rate of surgeon suicide has consistently decreased compared with the general population.¹³ For suicides among all surgical specialties, men comprised 95.8%, and men were much more likely to die at an older age compared with female surgeons (64 vs. 39 years, respectively).¹³ Among surgeons, Black/African Americans were 56% less likely (OR = 0.44 95% CI, 0.06 to 3.16), and Asian/Pacific Islanders were 438% more likely (OR = 5.38, 95% CI, 2.13 to 13.56) compared with the general population to die by suicide. These demographic differences are alarming and likely reflect specific cultural, gender, and generational gaps to further explore.

During this same time period, orthopaedic surgeons had the highest prevalence of suicide (28.2%) among all surgical subspecialties (Table 1).¹³ Compared with the general population, surgeons with a history of alcohol use were 139% more likely (OR = 2.39, 95% CI, 1.36 to

Figure 1

Over the last 2 weeks, how often have you been bothered by any of the following	Not at all (0)	Several days (1)	More than half the days (2)	Nearly every day (3)
Little interest or pleasure in doing things				
Feeling down, depressed, or hopeless				
Trouble falling or staying asleep, or sleeping too much				
Feeling tired or having little energy				
Poor appetite or overeating				
Feeling bad about yourself – or that you are a failure or have let yourself or your family down				
Trouble concentrating on things, such as reading the newspaper or watching television				
Moving or speaking so slowly that other people have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual				
Thoughts that you would be better off dead or hurting yourself in some way				
Total Score				

Table showing the Nine Symptom Checklist for Depression. The Patient Health Questionnaire 9 was developed by Drs. Robert L. Spitzer, Janet BW Williams, Kurt Kroenke, and colleagues. It is used to determine the severity of depression. Total score is the summation all answers, depression severity: 0 to 4 = minimal or none (monitor, may not require treatment); 5 to 9 = mild (use clinical judgment to determine the necessity of treatment), 10 to 14 = moderate (use clinical judgment to determine the necessity of treatment); 15 to 19 = moderately severe (warrants active treatment); and 20 to 27 = severe (warrants active treatment).

4.21), a history of mental disorders were 362% more likely (OR = 4.62, 95% CI, 2.71 to 7.85), or experiencing civil or legal issues were 289% more likely (OR = 3.89, 95% CI, 1.36 to 11.11) to die by suicide.

It seems that many of these issues may present early in training, with 16.6% of medical interns, 1 in 10 medical students, and 1 in 16 practicing physicians living with suicidal thoughts.¹⁴⁻¹⁶ Those reporting signs of depression or multiple life stressors at once are most likely to be suffering with suicidal ideations.¹⁷ This emphasizes the importance of education and prevention during the early parts of training for surgeons. If you or anyone you know is having suicidal thoughts, you should seek immediate treatment or call 911 for assistance. We list some emergency contact information in Table 2 if help is needed.

Barriers to Seeking Mental Health Treatment

Schwenk et al raised concerns about accepting the high rate and range of reported physician burnout.¹⁸ Could it be possible that 0% to 85% (almost none to nearly all) of physicians are burnt out? We continue to learn about the complex interplay between burnout, mental illness, and suicide. It has been generally accepted that unrecognized burnout or high levels of stress could lead to mental health issues such as depression or suicidal behaviors.^{4,5,19} Menon et al¹⁹ challenged this notion and found that after controlling for depression, burnout was a confounding variable and not significantly associated with suicidal behaviors (OR, 0.85; 95% CI, 0.63 to 1.17). Yet, Bianchi et al investigated the symptoms of burnout versus depression and were unable to find a significant difference, therefore rejecting the idea that burnout should be a separate diagnosis

Table 1. Distribution of Surgeon Suicide by Surgical Subspecialty¹³

Surgical Subspecialty	Percentage (number)
Orthopaedic surgery	28.2% (N = 20)
General surgery	11.3% (N = 8)
Neurosurgery	7.0% (N = 5)
Plastic surgery	7.0% (N = 5)
Other/unspecified subspecialty	33.8% (N = 24)

All surgeon death by suicide from 2003 to 2017, categorized by reported surgical subspecialty. The following data were derived from the work of Elkbulli et al using the Center for Disease Control National Violent Death Reporting System.¹

from depression.²⁰ This challenges our current view, which makes a clear distinction between burnout and depression, and suggests that the minimization of burnout symptoms compared with depression may be a barrier to seeking mental health treatment.

Major systematic barriers to obtaining mental health treatment include the stigma around seeking help and fear of punitive actions for establishing psychiatric care. Only 9% of orthopaedic residents sought out professional assistance for work-related stress, despite 61%, 52%, and 13% suffering from substance abuse, burnout, and depression respectively.¹⁰ Medical students with burnout strongly felt that their emotional issues were stigmatized by their profession.²¹ Those who did seek help felt negatively judged by their supervisors (OR = 2.06, 95% CI 1.25 to 3.39) and were more likely to have their peers reveal their mental health issues to others (OR = 1.63, 95% CI 1.08 to 2.47). Goldman et al²² identified concerns around loss of confidentiality, negative effects on licensure, and risk of losing staffing privileging as potential barriers for physicians seeking treatment of mental health issues. In the United States, a third of states have medical licensure application questions specifically concerning mental health disorders. Drybye et al found that nearly 40% of physicians were reluctant to seek formal medical care for treatment of a mental health conditions because they are concerned for medical licensure repercussions.²¹ Health policy advocates may play a significant role in reducing these issues at the state level.

A Top-Down Approach to Surgeon Well-Being

To improve the mental health of orthopaedic surgeons, there must be buy in from all whom contribute to their well-being or lack thereof. Figure 2 is an upside-down pyramid; the individual surgeon is purposefully placed at the bottom as he or she bears the weight of the institutions above him or her. Are surgeons, who have meetings starting at 6 AM and finish in the operating room or clinic at 8 PM, expected to balance this entire structure alone? Decisive and definitive changes can be made to cultivate safe spaces, establish protected time, and provide proven professional resources for surgeons and hospital staff to practice mental health.

Healthcare organizations have the power to create a culture around surgeon wellness, which will ultimately reduce costs caused by medical errors and staff turnover.²³ The Accreditation Council for Graduate

Table 2. Emergency Numbers for Mental Health Issues

	Reason for Calling	Number
Emergency medical services	Call for life-threatening situation	911
National Suicide Prevention Lifeline	24h/7d trained crisis workers available to talk	1-800-273-8255
Substance Abuse and Mental Health Services Administration (SAMHSA) Treatment Referral Helpline	Information on mental health and locate treatment services in your area	1-877-726-4727
Crisis Text Line (National Alliance on Mental Illness)	Get connected with a crisis counselor via text message 24h/7d	Text "Hello" to 741741
National Alliance on Mental Illness (NAMI) HelpLine	NAMI volunteers available to offer support, answer questions, and provide practical next steps	1-800-950-6264
The Trevor Project	Suicide and crisis prevention for LGBTQ	866-488-7386

NAMI = National Alliance on Mental Illness, SAMHSA = Substance Abuse and Mental Health Services Administration
If you are someone you know needs emergency assistance, always call 911 for immediate help.

Medical Education recognizes this responsibility and now requires residency programs to enact policies that directly prioritize resident mental health.²⁴ Institutions can strengthen high-performance teams, which promote shared values, vulnerability, and accountability rather than hierarchy.²⁵ Some changes institutions may implement include eliminating unnecessary work obligations, creating protected work hours for surgeon peer discussion groups, improving workflow and electronic health record inefficiencies, and increasing ancillary staff capacity (Figure 1).²⁴⁻²⁶

Institutions should establish an infrastructure to provide proven professional mental health support. This could take the form of hiring a Chief Wellness Officer to help oversee and normalize regularly scheduled counseling or psychiatric services. This approach has shown to decrease burnout, depression, and suicide.^{25,27,28} Broxterman et al²⁹ implemented a counseling services program, in which residents were prescheduled to meet with a counselor with the option of opting out if they choose. Nearly all, 96% felt that counseling was helpful. Before the program, 73% of residents had never used counseling or professional support; yet after, 79% said that they would now continue to seek counseling when needed in the future. After the study, 86% requested their residency program to continue scheduling wellness visits for them.

Professional athletes and top-performing CEOs work with one-on-one coaches on a regular basis to be the best in their field. Why should not surgeons, who strive to be high performers, also work one on one with coaches to improve their ability to take care of patients, develop as leaders, deal with work stressors, and implement wellness practices. This has been done on a smaller scale, and

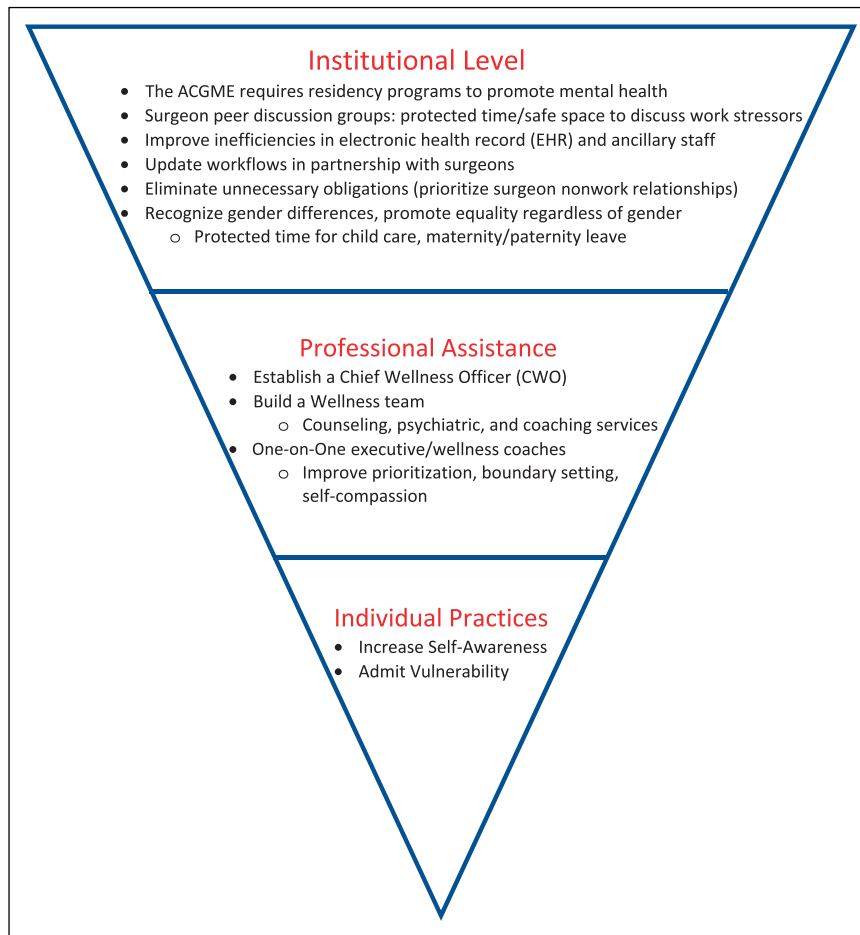
physicians who have worked with coaches report a positive effect on boundary setting, prioritization, self-compassion, self-care, and self-awareness.^{28,30}

With institutional support, individuals can find the time to practice mindfulness to cope and better adjust to stressors in the work place.³¹ With destigmatization of mental health, coaching, and peer groups in place, we can also begin to admit our own vulnerabilities. Surgeons are humans too, we make mistakes, and we are not perfect. With this self-acceptance, we can start to support ourselves and others through healthy habits of self-compassion. In Table 3, we highlight a variety of easily accessible resources and applications for orthopaedic surgeons to use to practice mindfulness and maintain mental wellness on a regular basis.

Current Research by Orthopaedic Societies

The American Society for Surgery of the Hand and The Pediatric Orthopaedic Society of North America have conducted research in this area. The American Society for Surgery of the Hand found that 49% of hand surgeons reported burnout.³² Factors contributing to the lowest rate of burnout included: those older than 65 years, working in an outpatient setting, performing hand-specific surgeries only, lower commute times, performing 10 or fewer surgeries per month and those grandfathered in for maintenance of certification. Sex, compensation level, or involvement in hand travel clubs did not show an effect on burnout. It is important to note that some of these factors, such as being older than 65 years or performing less than 10 surgeries per month, are not realistic for any

Figure 2



Upside-down pyramid showing the top-down approach to surgeon well-being. Culture change surrounding mental health can be derived by the prioritization and different practices performed by institutions, mental health professionals, and ultimately individual surgeons.²⁵⁻³²

full-time surgeon. This study though, should spark curiosity to better understand what practice scenarios or changes would increase the wellbeing for surgeons within our own orthopaedic subspecialties. This can be a starting place to explore more specific questions like: What is the ideal case load for surgeons at various stages in one’s career? What is the right balance between outpatient versus inpatient setting that is desired? Does the

amount of specialization need to increase or decrease within institutions? At what age or stage should surgeons be taking on different caseloads/complexities? and How is a subspecialty society able to best serve the mental health of its members?

In May 2018, the Pediatric Orthopaedic Society of North America established a Member Health and Wellness Charter to combat burnout, depression, and

Table 3. Resources for Practicing Mental Wellness

Meditation or wellness applications	Waking Up	Calm	Real
	Headspace	Insight Timer	Smiling Mind
	UCLA Mindful	Koa Health	Mindfulness Coach
Mindfulness practices	Journaling	Yoga	Breathwork
	Retreats with like-minded communities	Exercise routines	Hiking/walking

Meditation or wellness applications can be found online or through most cellular phone application stores. These are representative examples and are not inclusive of all available options.

suicide.³³ Over its first three years, the charter plans to redesign fellowship training, healthcare delivery, and research prioritization. In regard to fellowship training, they aim to promote compassionate connection with patients and families and promote fellow efficiency and autonomy. Second, they will work with medical ancillary staff to optimize care systems (ie, electronic health record, regulatory and documentation burdens, and reimbursement). Furthermore, the organization will prioritize a research agenda to understand whether these interventions are helping to improve surgeon health and culture and clinical outcomes. Research by other orthopaedic subspecialties may be needed to better understand their own challenges and develop a set of unique goals for improving surgeon wellness.

Conclusion

Orthopaedic surgeons currently have the highest prevalence of death by suicide among all surgical subspecialties. Mental health disorders, civil or legal issues, and simultaneous stressors are important factors in surgeon suicidal thoughts and behaviors. There is a need to enact institutional changes that help to evolve the orthopaedic culture and overcome the stigma, which exist around seeking professional mental health help. Awareness should begin at the earliest possible stages of training. It is with awareness that we as the orthopaedic community can initiate important discussions among specialty societies, practices, families, and most importantly, within oneself.

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